

## TEXTURAL ANALYSIS OF DIFFERENT SOIL TYPES USING KETTLER SIMPLIFIED METHOD

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### ABSTRACT

Soil texture is a vital component for assessing the suitability and quality of soil and sustainability of agricultural-management practices. Due to difficulties and time consumption properties of the pipette and hydrometer methods, a simplified rapid method was introduced by Kettler. In Kettler method the procedures was simplified. The Kettler rapid method may work differently in various soil types, therefore, the objective was to evaluate the simplified Kettler method for assessing soil particle size distribution in different calcareous, gypsiferous and saline soils of south western Iran. Therefore, different soil types including 12 calcareous, 10 gypsiferous and 9 saline soils were collected from 0-20 cm depth of Shiraz, Kazeroon and Ahvaz /Shiraz plains of Iran, respectively. Samples were taken to laboratory, air dried and passed through a 2 mm sieve and soil textural analyses were performed using the simplified Kettler method and standard Pipette method. Absolute differences for clay, silt and sand contents between Pipette and Rapid methods for entire 31 studied soils ranged from 28 to 35, 38 to 42, and 17 to 34%, respectively. The mean values of aforementioned differences were 2, 4 and 5%, respectively. Whereas, separation of calcareous, gypsiferous, and saline soils resulted in absolute differences for clay, silt and sand contents between Pipette and Rapid methods from 10 to 16, 14 to 19, and 14 to 17 with the average differences of 2, 1 and 3 % in calcareous soils, respectively. The aforementioned differences were 28 to 35, 38 to 42, and 17 to 34% with the average values of 3, 6 and 8%, for gypsiferous soils and were 5 to 12, 2 to 15, and 6-18% with the average values of 1, 5 and 6% for saline soils, respectively. Findings demonstrated that clay particles of entire soil samples measured by Rapid method were the most accurate among the measured soil particles. Whereas, sand content that measured by Rapid method was the least accurate.

**Keywords:** Calcareous soil, Gypsiferous soils, saline soils, rapid method, pipette method



The 1st International Conference on New Ideas in Agriculture  
Islamic Azad University Khorasgan Branch  
26-27 Jan. 2014, Isfahan, Iran

